Recent High Altitude Archeological Surveys at Cedar Breaks National Monument, Utah

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Abstract. The cultural history of southern Utah's Markagunt Plateau is not well known, but recent archeological surveys have focused on the identification and interpretation of cultural resources within Cedar Breaks National Monument. We conducted survey work in two discrete areas: (1) the lower portions of the monument at elevations ranging from 7,800 to 9,200 feet (2,377 to 2,804 m); and (2) at higher elevations ranging from 10,100 to 10,600 ft (3,078 to 3,230 m). The lower survey areas were found to contain very few archeological resources while the upper portions of the monument were heavily utilized by prehistoric people for at least 3-4,000 years and perhaps longer. Procurement of chert from the Brian Head Formation appears to have been a primary activity. In addition to the archeological investigations, ancillary studies were initiated, including petrographic and trace mineral analysis of the chert source, obsidian sourcing, palynological studies of area peat bogs, and dendroclimatic studies. These ancillary studies will enable a better understanding of prehistoric land use on the Markagunt Plateau, and specifically at Cedar Breaks National Monument.

Key words: cultural resources, Archaic, Late Prehistoric, lithic scatters, chert quarries, paleoenvironment, Cedar Breaks National Monument, Markagunt Plateau

INTRODUCTION

The Markagunt Plateau, oriented southwest-northeast, is the westernmost of the High Plateaus subdivision of the Colorado Plateau physiographic province (Foster 1968), with the Great Basin beginning directly west of the Markagunt Plateau. Cedar Breaks National Monument is a 6,155 acre preserve located along the western margin of the Markagunt Plateau (Fig. 1). In an attempt to learn more about the cultural history of Cedar Breaks , we conducted an archeological survey of the monument.

This project is located along the western edge of the Markagunt Plateau and encompasses both the lower portions of Cedar Breaks National Monument as well as the upper rim (Fig. 2). This project is part of the National Park Service's Systemwide Archeological Inventory Program and was conducted by archeologists from Zion National Park. We are currently in the third year of a four-year project, and have intensively examined nearly all of the monument accessible to pedestrian surveyors. This paper summarizes the results of two years of research at Cedar Breaks and provides a framework for research during the final two years.

Figure 1. Overview of Cedar Breaks National Monument.

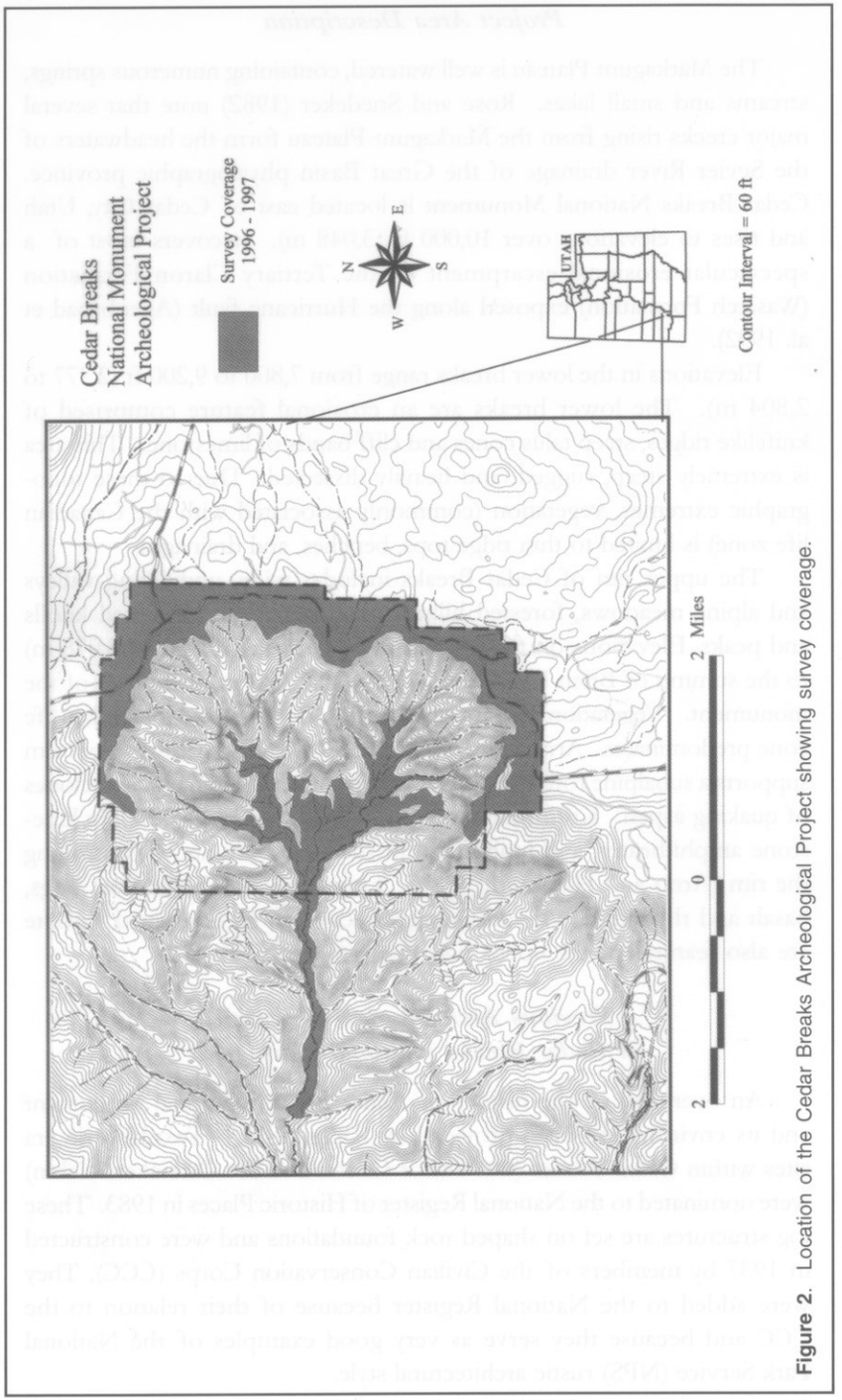

Figure 2. Location of the Cedar Breaks Archeological Project showing survey coverage.

Project Area Description

The Markagunt Plateau is well watered, containing numerous springs, streams and small lakes. Rose and Snedeker (1982) note that several major creeks rising from the Markagunt Plateau form the headwaters of the Sevier River drainage of the Great Basin physiographic province. Cedar Breaks National Monument is located east of Cedar City, Utah and rises to elevations over 10,000 ft (3,048 m). It covers most of a spectacular erosional escarpment of the Tertiary Claron Formation (Wasatch Formation) exposed along the Hurricane fault (Agenbroad et al. 1992).

Elevations in the lower breaks range from 7,800 to 9,200 ft (2,377 to 2,804 m). The lower breaks are an erosional feature comprised of knifelike ridges, steep talus cones and cliff bands of limestone. This area is extremely steep, rugged, and heavily dissected. Due to these topographic extremes, vegetation (commonly associated with the Canadian life zone) is limited to thin ridge tops, benches, and drainages.

The upper rim of Cedar Breaks includes wide, undulating valleys and alpine meadows, forested hillsides and ridges, and exposed knolls and peaks. Elevations on the upper rim range from 10,100 ft (3,078 m) to the summit of Brian Head Peak, 11,278 ft (3,437 m) just north of the monument. Vegetation commonly associated with the Hudsonian life zone predominates. Arno and Hammerly (1984) note that the upper rim supports a subalpine forest of Englemann spruce, subalpine fir, and clones of quaking aspen. Krummholz occasionally descends into the dry limestone amphitheater, and limber and bristlecone pines are present along the rim (Arno and Hammerly 1984). Limestone sink holes, peat bogs, basalt and rhyolite flows, and large areas covered by brecciated rhyolite are also features of the upper rim.

Previous Archeological Research at Cedar Breaks National Monument

An overview of the history of Cedar Breaks National Monument and its environs has been provided by Klein (1991). Two historic era sites within Cedar Breaks (the Visitor Center and the Caretakers Cabin) were nominated to the National Register of Historic Places in 1983. These log structures are set on shaped rock foundations and were constructed in 1937 by members of the Civilian Conservation Corps (CCC). They were added to the National Register because of their relation to the CCC and because they serve as very good examples of the National Park Service (NPS) rustic architectural style.

High altitude areas in the western United States have only recently been the focus of scholars interested in prehistoric land use (e.g., Benedict 1975, 1981, 1985, 1992, 1996, Bettinger 1990, 1991, Bettinger and Oglesby 1985, Canaday 1991, 1992a, 1992b, 1996, 1997, Canaday and Reutebuch 1994, Canaday et al. 1997, Grayson 1988, 1990, 1991, 1993, n.d., Simms 1979, 1993, Thomas 1982, Thomas and Pendleton 1990, Wickstrom 1993, Winter 1983). Prior to the Cedar Breaks Archeological Project, the only prehistoric investigations conducted in the high country of the Markagunt Plateau were related to Cultural Resource Management (CRM) projects (e.g., Craig 1977, Dykman 1976, Rose and Snedeker 1982, Sargent 1979).

Between 1974 and 1982 archeologists from the Dixie National Forest conducted thirteen CRM projects on the Markagunt Plateau. The surveys covered some 2,180 acres and a total of 45 sites were identified (Craig 1977, Dykman 1976, Rose and Snedeker 1982: Table 2). These sites consist of lithic scatters with no apparent subsurface cultural deposits. All seem to share similar characteristics in that hearths, structural features, groundstone and ceramics are absent and the majority of the debitage is thought to be the locally-available Brian Head chert and chalcedony. The only non-chert lithic materials on any of these sites are a few pieces of obsidian (Rose and Snedeker 1982). Obsidian samples analyzed from four Markagunt Plateau sites (42In223, 229, 231, and 232) have been traced to the Mineral Mountains approximately 50 miles (80.5 km) to the north (Nelson and Holmes 1979).

Several sites discovered during these CRM projects suggest that the prehistory of the Markagunt Plateau is both behaviorally and temporally complex. The Long Flat site (42In330), first reported by Dykman (1976), was added to the National Register of Historic Places in 1979. This site ranges in elevation from 10,000 to 10,200 ft (3,048 to 3,109 m), encompasses approximately 750,000 square meters (1,500 x 500 meters in some places), and is thought to date from the Archaic to Ethnohistoric times (Hawkins 1979). It was added to the National Register because of its importance as a chert quarry centered around four chert outcrops, its large size and intra site complexity, and its high elevation (Rose and Snedeker 1982).

The Lowder Creek Bog site (42In461), tested by Sargent (1979), is perhaps more important for its paleoenvironmental potential than for its archeological significance. This site is located at the base of Brian Head Peak, at an elevation of 10,319 ft (3,145 m), approximately two miles (3.2 km) northeast of Cedar Breaks and seems to have served primarily as a quarry and associated tool manufacture. Sargent (1979) suggests that

much of the chert/chalcedony debitage recovered at the Lowder Creek Bog site had been heat treated.

The North Point site (42In1210), described by Agenbroad (1992, 1993), contains several deeply buried paleosols eroding from the edge of Cedar Breaks some 6.56 to 13.12 ft (2 to 4 m) below the present ground surface. Dates recovered from these strata were 7,650 +/- 90 years BP (Beta 21121) and 9,005 +/- 175 years BP (GX:11405), respectively. Limited cultural debris is present including utilized flakes, tertiary flakes and a one-hand, sandstone mano/hammer. Unfortunately, the association of the artifacts to the paleosols is not clear and much archeological research remains to be done at this site (Adrienne Anderson pers. com.). Paleoenvironmental research at the North Point site is discussed below.

Research Questions

The primary objective of this project was a 100 percent archeological inventory of all portions of Cedar Breaks National Monument that are not too steep for human use. Because of the small size of the park, roughly 9.5 square miles (24.3 km^2), and its position on the Markagunt Plateau, cooperative research with the surrounding Dixie National Forest was built into the overall program.

Because very little archeological research has been conducted in the monument and the surrounding Markagunt Plateau, data collection was designed to provide information for efficient management and interpretation of both historic and prehistoric resources. To that end, each resource is entered into the monument's GIS program. Research questions are tied to a series of domains — including Chronology, Settlement Patterns, Subsistence and Resource Procurement, Material Culture, and Paleoenvironment. The program is expected to address the basic questions of: (1) who used monument lands during the historic and prehistoric period; (2) during what specific time periods did this use occur; (3) what types of activities took place; and, (4) what resources were being utilized.

Survey Results in the Lower Breaks

An intensive pedestrian survey of Cedar Breaks National Monument was conducted during the summers of 1996 and 1997 using transects spaced approximately 49 ft (15 m) apart. A total of 2,218 acres (approximately 36% of the monument) was inspected during the two summer field seasons. Survey during the first field season (Frank 1997) primarily concentrated on the lower portion of the monument, below the rim of the plateau, although a small section of the upper rim was also inspected. Survey areas were determined by percentage of slope, less than 20%, thus omitting large sections of the rough and dissected terrain in the lower part of the breaks. Surprisingly few cultural resources were encountered in the lower breaks despite intensive inspection. Four historic sites dating to the early 20th Century and twenty-one isolated prehistoric occurrences were encountered in the lower breaks during the 1996 field season.

Historic Resources in the Lower Breaks

Three of the four historic sites are located just outside of the monument on Forest Service property, and all are related principally to logging of the Ashdown Meadows (Frank 1997). Two of the sites appear to be historic homesteads containing cabin remnants, corrals and scatters of historic debris. One site is thought to be a logging camp, while the fourth site is a historic road linking several sites along Ashdown Creek.

Prehistoric Resources in the Lower Breaks

All of the isolated occurrences documented in the lower breaks consist of single pieces of debitage (seven occurrences) or small, discrete scatters of debitage, cores or expedient tools (14 occurrences containing between two and eight artifacts). These isolates indicate limited prehistoric use of the lower breaks. No diagnostic, time sensitive prehistoric artifacts were encountered in the lower portions of the monument. The limited prehistoric use of the lower breaks differs greatly from that observed on the upper rim.

Survey Results on the Upper Rim

Survey of the upper rim of the monument was completed during the 1997 field season (Canaday 1998). Archeology of the higher monument elevations is in stark contrast to that observed in the lower breaks. Here, extensive lithic scatters and lithic source areas are the norm, most dating to the Middle and Late Archaic, though limited Late Prehistoric and historic use is also evident. A total of 96 sites were recorded, 77 prehistoric, 15 historic and four sites with both historic and prehistoric components. In addition, 11 isolated artifacts (solitary flakes, bifaces and projectile points) were encountered. Eleven high density loci were also identified and recorded within a very large, previously identified prehis-

toric site (42In1135) located on both the Dixie National Forest and Cedar Breaks National Monument.

Historic Resources in the Upper Breaks

Historic use of the upper rim is present in the form of sheep herding camps, log fences, roads, and recreation related sites. Of the 19 historic sites (including historic components within prehistoric sites), four contain cabin remnants; three are wood pole fences probably associated with the original Cedar Breaks boundary; three contain miscellaneous scatters of historic debris such as bottles (Fig. 3), wood and metal fragments; two appear to be borrow areas associated with the construction

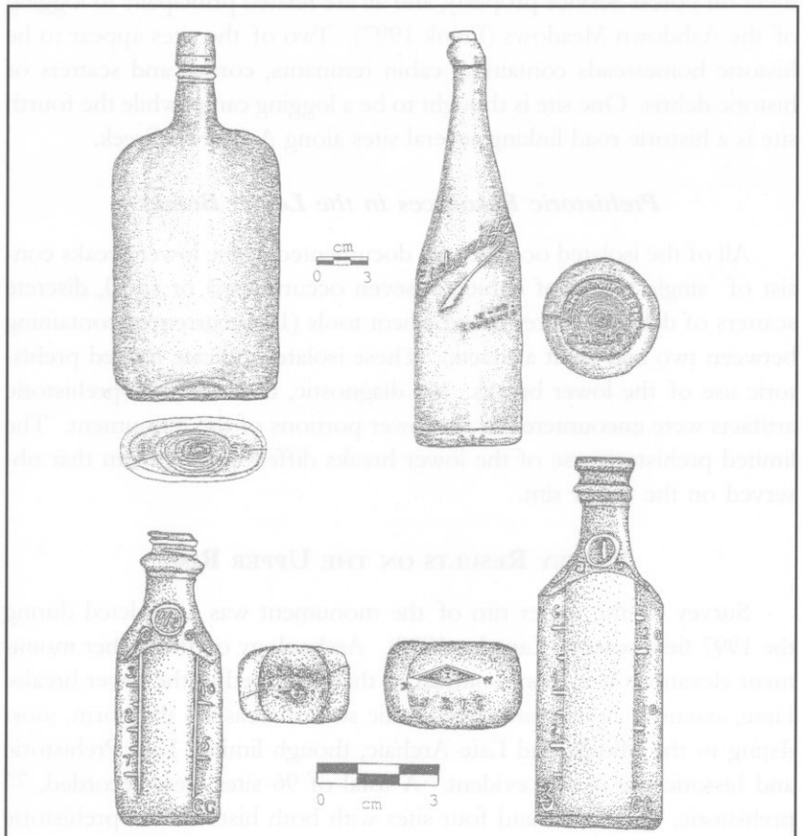

Figure 3. Historic era bottles from Cedar Breaks National Monument. The artifact depicted in the upper left was collected from the lower breaks (42In1424); the remaining artifacts were collected from the upper breaks (42In1543).

of State Route 148 through the monument; two are USGS benchmarks dating to 1936; two are roads; one is a grove of aspen containing historic inscriptions (1909-1946); one is a rock foundation probably constructed by the CCC in the 1930s; and one is the site of the original Cedar Breaks Lodge.

One of the historic cabin remnants is the site of Minnies Mansion, (42In1429) which was built in 1921 and included a dance hall. Minnies Mansion was named for Miriam 'Minnie' Adams Burton, who provided lodging and food for sheep herders operating in the area. Occasionally, rodeos and dances were held at Minnies Mansion for the local inhabitants of 'Little Ireland' (a collection of Irish Morman families who had established ranches near the base of Brian Head Peak), and residents of Parowan (Klein 1991, Frank 1997). With the establishment of Cedar Breaks National Monument in 1933, Minnies Mansion was razed. Frank (1997) notes that milled lumber fragments and a historic debris scatter are still present at this site.

Cedar Breaks Lodge (42In1573) was razed by the National Park Service in 1971. The lodge was established in 1924 by the Union Pacific Company (of railroad fame) who operated a tour business in southwestern Utah and northern Arizona. Lodges were operated at various locations (including Zion, the North Rim of the Grand Canyon, Bryce Canyon and Cedar Breaks) by the Union Pacific Company in order to cater to railroad customers interested in touring the scenic wonders of the area (Klein 1991). All that is left of the lodge today are several foundation remnants, access roads (now revegetated), and a scatter of historic and recent debris.

Prehistoric Resources in the Upper Breaks

Boundaries of historic and prehistoric sites are defined as continuous cultural resources if there is no break in the artifact scatter greater than 98 ft (30 m). Under this definition, some of the prehistoric sites encountered during the Cedar Breaks survey are very large. The largest of these (42In1135) is over three miles (4.8 km) long and nearly a mile (1.6 km) wide. Thousands of pieces of debitage are scattered nearly continuously across this site, broken only by areas of dense concentration where chert and chalcedony nodules of the local Brian Head formation have been tested and reduced. On the main, primary reduction is the focus at this site with final reduction performed elsewhere. Based on diagnostic artifacts collected from the surface, use of the area spans the last three or four thousand years and perhaps longer, because Forest

Service archeologists report a possible fluted point from this site (M. Jacklin pers. com.).

The 81 sites containing prehistoric components discovered on the upper rim are similar in many ways to 42In1135 and to the other sites previously reported on the Markagunt Plateau (e.g., Rose and Snedeker 1982). The Table below presents data on artifact distributions from sites located on the upper rim of the monument. Projectile point types collected from these sites include Humboldt, Pinto, Gypsum, Elko, Rosegate, Bull Creek, and Parowan Series (Figs. 4 and 5). Artifact distributions and diagnostic projectile point frequencies suggest that most of these sites served as tool stone reduction loci by people visiting the high country during the Middle and Late Archaic Periods. Of all projectile points collected from the surface of the Cedar Breaks sites, 79% are considered to be from the Archaic Period (Fig. 6). Based on the preponderance of debitage and tested chert nodules, procurement and primary reduction

Table. Artifact summary from Cedar Breaks National Monument.

Artifact Type	Dates (B.P.)*	# of Sites	# 0f Ob	# of Chert	Artifacts Other	Artifacts Total
Pinto Series	8250 to 6150	4	3	2		5
Humboldt Series	7950 to 5950	1		1		1
Elko Series	7950 to 950	7	3	9		12
Gypsum Series	4450 to 1450	4	1	8		9
Rosegate Series	1650 to 1050	2	1	1		2
Bull Creek Series	1100 to 800	2		2		2
Parowan Series	950 to 750	3	1	2		3
Large Corner Notch		8	4	9		13
Small Corner Notch		1		1		1
Side & Basal Notch		1		1		1
Biface		32	14	74		88
Uniface		4		3	1-Qzt	4
Scraper		7		16		16
Utilized Flake		19		93		93
Hammerstone		4			2-Ryo,2-SS,3-Qtz	7
Edge Grinder		1			1-Qtz	1
Groundstone-Slab		1			1-Ryo	1
Snake Valley B/G	1050 to 750	1			Black-on-gray	1
Unknown Ceramics	1550 to 700	2			Plain Grayware	24

Ob-Obsidian; Qtz-Quartzite; Ryo-Rhyolite; SS-Sandstone

*Ceramic dates based on Fairley et al. (1989) and R. Madsen (1977).

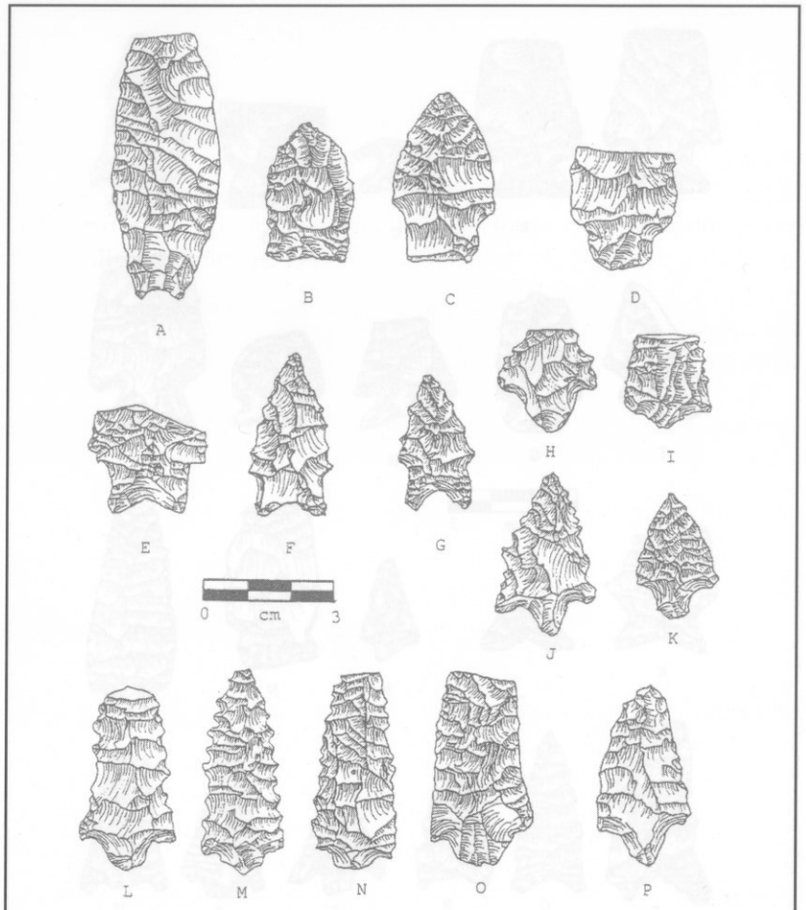

Figure 4. Selected Humboldt (A), Pinto (B - G), and Gypsum Series projectile points from Cedar Breaks National Monument.

of the locally-available Brian Head chert seems to be the main focus of prehistoric land use. Hunting of both large and small mammals undoubtedly occurred, but special game procurement strategies (i.e., using hunting blinds and drivelines) such as those described in similar high altitude settings of the Great Basin (Canaday 1992b, 1996, 1997, Thomas 1982) and Rocky Mountains (Benedict 1975, 1981, 1985, 1987, 1992, 1996), were not encountered at Cedar Breaks. Similarly, sites reported from the Markagunt Plateau lack hunting blinds and drivelines indicative

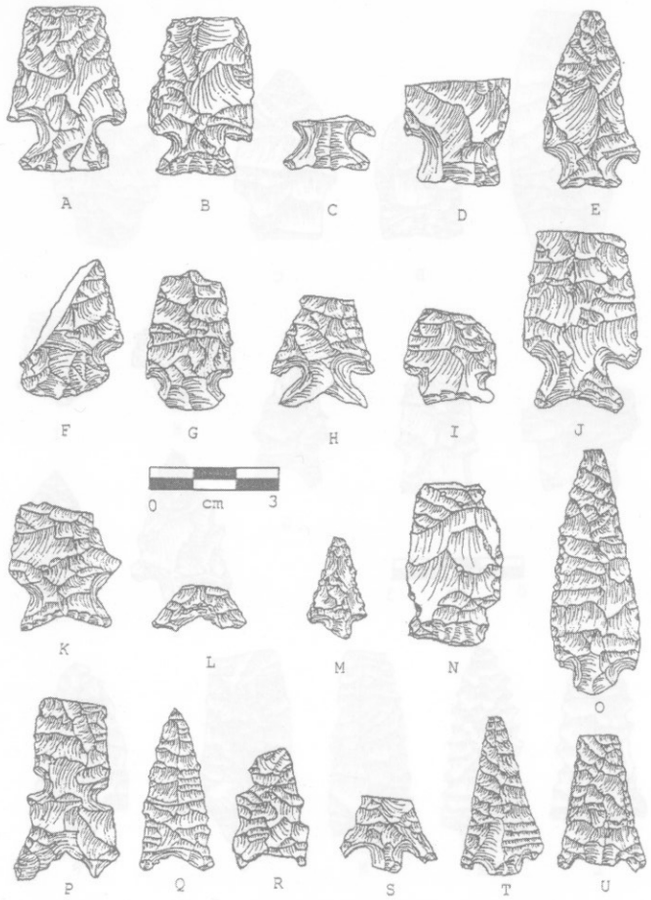

Figure 5. Selected Elko (A - L; N - O), Rosegate (M), Bull Creek (Q - R), and Parowan (S - U) Series projectile points, and an unknown type (P) projectile point from Cedar Breaks National Monument.

of intercept hunting strategies (Binford 1978, Canaday 1997, Pendleton and Thomas 1983).

Late Prehistoric use of the upper rim is indicated at three sites where ceramics and arrow points are present. A Fremont Snake Valley Black-on-gray jar sherd and a Bull Creek projectile point were collected from the surface of site 42In1430. Two other sites (42In1135 and 42In1522) contain plain grayware sherds that are probably attributable to Fremont though the presence of Virgin Anasazi in the area cannot be discounted.

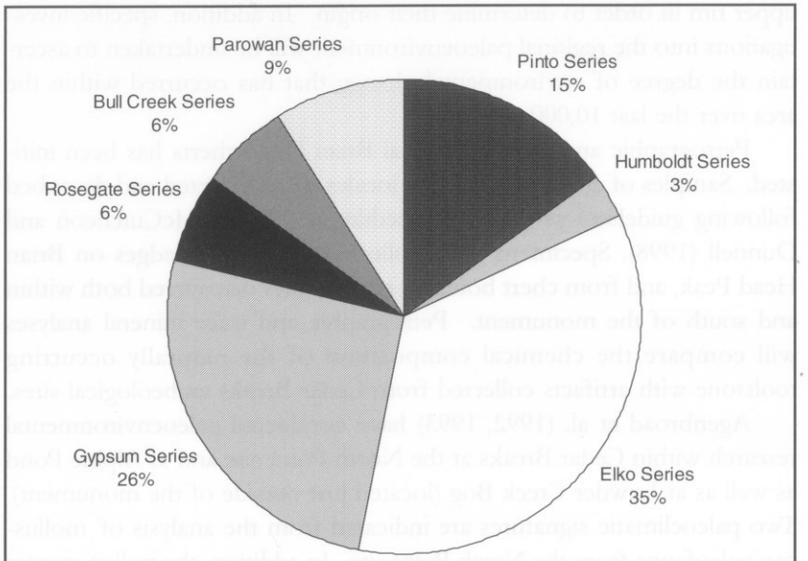

Figure 6. Percentage of projectile point types found at Cedar Breaks National Monument.

Analysis of manufacturing technique, and temper and clay composition, failed to definitively assign these sherds to a specific cultural affiliation. Regardless, the presence of ceramics in these high elevation settings is unique to the Markagunt Plateau. Groundstone, previously identified at only the North Point site, is also present at one of the sites (42In1522) containing ceramics, as is a possible fire hearth. The presence of groundstone, together with ceramics at this site, suggests the possibility of a changing land use strategy during the Late Prehistoric, perhaps one utilizing a different suite of resources.

ANCILLARY INVESTIGATIONS

Ancillary analyses of paleoclimate and resource potential of the Cedar Breaks area have been initiated. These analyses will be used to help interpret the archeological record. Included in these satellite studies will be: (1) additional pollen analyses of area peat bogs; (2) dendroclimatic reconstruction through analysis of bristlecone pine cores; (3) trace element analysis of obsidian artifacts to determine where these exotic materials originated; (5) petrographic analysis of the local Brian Head chert; and, (6) geological studies of the thick colluvial deposits that cover the

upper rim in order to determine their origin. In addition, specific investigations into the regional paleoenvironment will be undertaken to ascertain the degree of environmental change that has occurred within the area over the last 10,000 years.

Petrographic analysis of the local Brian Head cherts has been initiated. Samples of chert from several locales were collected and described following guidelines set forth in Luedtke (1992) and McCutcheon and Dunnell (1998). Specimens were collected from chert ledges on Brian Head Peak, and from chert boulders and nodules discovered both within and south of the monument. Petrographic and trace mineral analyses will compare the chemical composition of the naturally occurring toolstone with artifacts collected from Cedar Breaks archeological sites.

Agenbroad et al. (1992, 1993) have conducted paleoenvironmental research within Cedar Breaks at the North Point site and at Alpine Pond as well as at Lowder Creek Bog (located just outside of the monument). Two paleoclimatic signatures are indicated from the analysis of molluscan paleofauna from the North Point site. In addition, the pollen spectra indicates a shift from alpine forest communities at or before 9,005 B.P. to open shrubland at or about 7,650 B.P. (Agenbroad et al. 1992). Environments similar to that observed today were apparently in place by 1,530 ±130 years B.P.

Madsen (1997) has recently completed preliminary analyses of peat bog deposits adjacent to Cedar Breaks as part of a cooperative agreement between the NPS, Dixie National Forest and the Utah Geological Survey. His work has centered on Lowder Creek bog (where he hopes to extend the paleoenvironmental record initiated by Agenbroad et al.) and Red Valley bog. This research was initiated in order to 'provide data on the changing environmental conditions facing prehistoric people in the area.' Evidence of beetle infestations and fire frequency that might have affected regional forest ecosystems was sought at Red Valley bog. At least 14 fire horizons were recognized by Madsen (1997) at Red Valley bog and 'appear to occur at rather constant intervals throughout the deposits.' The bog deposits span the last approximately 11,400 years, and fires appear to re-occur every 700 - 800 years. Additional work is planned at Red Valley bog to determine how consistent the deposition rate is and to directly date fire horizons. Collection and analysis of plant macrofossils is also planned in order to assess the local forest composition. Other paleoenvironmental research planned at Red Valley bog includes pollen analyses and retrieval of fossil beetle assemblages.

Finally, an additional component of the Cedar Breaks Archeological Project will include ethnographic studies. Ethnographic work is planned with the Southern Paiute of Utah and Arizona, who have cultural affinity to and traditional uses of the Markagunt Plateau. DeBloois (1983) suggests that Southern Paiute groups wintering at Panguich Lake (at the north end of the Markagunt Plateau) followed a seasonal round that started and ended at higher elevations than their Great Basin neighbors. As winter snows melted in the spring and summer, these groups are thought to have ranged upward to the higher elevations. Oral interviews are planned with Paiute elders to gain a better understanding of both historic and contemporary traditional uses of Cedar Breaks.

CONCLUSIONS

The second year of this four year project has just been completed. Thus, the research reported here is still preliminary but does provide guidance for future work as well as the basis for interim conclusions. The lower portions of Cedar Breaks National Monument are characterized by limited prehistoric and historic use. Historic utilization consists mainly of logging related activities. Prehistoric use is present, but on a very limited basis.

The upper portions of Cedar Breaks National Monument, on the other hand, were heavily utilized by prehistoric groups intent on procuring lithic raw material. The majority of sites discovered on the monument's upper rim contain evidence of primary lithic reduction. Tested chert nodules, primary decortication flakes, and secondary percussion flakes are present at nearly all sites. Late-stage biface reduction flakes are present at only a few of the sites but never dominate. Local Brian Head chert and chalcedony artifacts are present at every site that we encountered. Indeed, non-cultural Brian Head chert and chalcedony debris is prevalent throughout the area. Field protocols were developed to distinguish between natural and cultural lithic debris. Thus, it appears that primary reduction of the local Brian Head chert was the focus of Archaic peoples visiting the Cedar Breaks area with later stage reduction occurring elsewhere.

During the Late Prehistoric this pattern probably continued, but at a smaller scale. However, the presence of ceramics, groundstone and a possible hearth at one site may indicate additional activities being carried out. Frank and Betenson (1997) note that Cedar Breaks is near a transitional zone between the Parowan Fremont and the Virgin Anasazi. Both of these distinct, yet contemporary cultures were sedentary horticulturalists, but they may have had a seasonal interest in the monument resources.

Only one of the sherds recovered from the surface of the three ceramic-bearing Cedar Breaks sites could be positively identified as Fremont (a Snake Valley Black-on-gray jar sherd). The other plain grayware sherds could not be assigned to a specific group.

Virgin Anasazi use of high altitude areas has never been identified. Because ceramic typology is the traditional diagnostic indicator for Virgin Anasazi, use of the highlands by task-specific groups carrying an aceramic toolkit may have occurred, but may well be invisible to present day archeologists. This is especially the case for surface assemblages.

One of the goals for the third season of fieldwork will be to recover a larger sample of ceramic artifacts from Cedar Breaks sites. Test excavation of site 42In1522, which contained plain grayware sherds, groundstone and a possible hearth, is planned. Excavations are also planned at a number of other sites on the upper rim that appear to contain buried cultural deposits. Included will be a reexamination of the North Point site in order to determine the association of cultural remains to the deeply buried strata exposed along the edge of the Breaks.

This project will ultimately result in a clearer picture of the cultural history of Cedar Breaks National Monument.

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